Fact Sheet: High Volume Low Pressure Spray Equipment

Background Information

High Volume Low Pressure (HVLP) spraying is a technological solution to the paint and coating dilemma of applying larger amounts of paint or coatings, while at the same time trying to reduce the amount of paint/coatings wasted due to over-spray (material that has missed the target).

Prior to the HVLP systems, the accepted method of increasing the rate of paint/coatings application was to increase the pressure of the sprayer. However, as the spray pressure increased, an increased amount of material overshot the target or rebounded off the surface. This situation increased the amount of solid or hazardous waste produced and contributed to air pollution problems.

The breakthrough to this problem came with the development of HVLP spray systems. HVLP systems utilize innovative nozzle and gun designs as well as pressure regulators, to transfer large volumes of paint/coatings at pressures as low as 0.1 psi.

Pressures below 10 psi are now required to comply with some air quality rules relating to volatile organic compounds (VOC). The most frequently quoted standards are those of the South Coast Air Quality Management District (SCAQMD) around Los Angeles, CA. The SCAQMD standards are considered the most stringent in the United States.

Applications of HVLP Sprayers

HVLP sprayers are being used by industries that want efficient painting or finishing of their products. The increasing use of high-solids paints, those whose viscosity (thickness) make them more effectively applied, has also helped to popularize HVLP because high solids paints are applied so well by HVLP.

HVLP systems are being used with success in paint and coating operations in many industrial settings including the following:

* Furniture Finishing
* Painting of Manufactured Goods
* Autobody Repair

Purchasing Guidelines

The following list of purchasing considerations was developed to help businesses identify and evaluate current pollution prevention opportunities.

Although it is not possible to cover every aspect of equipment selection, the list covers some of the more important points and provides considerations for evaluating high volume low pressure spray equipment.

1. What type of HVLP spray equipment will best meet your company's needs?
2. Would a cup-fed or a tank-fed sprayer be best for your applications?
    1. A cup fed sprayer is an excellent choice for small jobs because it can be loaded with only the amount of paint that is needed.
2. The tank-fed sprayer would be more effective for continuous, large volume operations in which the tank would need to provide a substantial supply of paint.
3. Would you want to add an air heater to the HVLP system?
    1. Air heaters may decrease the drying time needed.
    2. Air heaters will increase the transfer of "high-solids" coating material.
    3. Air heaters reduce the moisture condensation inside the system.
4. Can you adapt any part of your existing system to the HVLP system or will you need to replace the system as a whole?
5. Does the equipment comply with South Coast Air Quality Management District (SCAQMD) requirements for airborne emissions of Volatile Organic Compounds (VOC)?
    1. The SCAQMD requirements provide a good standard for evaluating how effective the spray equipment is at reducing fugitive emissions.
6. Is the spray equipment warranted for use with the material that you want to apply?
7. Are the electrical controls and components UL listed, and do they meet your standards for safety at your facility?
8. What is the weight of the spray gun?
    1. If the gun is used for an entire shift, the weight of the gun could affect the productivity of the worker using it.
    2. A spray gun made from composite materials may be lighter than a gun made from metal.
9. What are the available sizes and shapes of the nozzles that can be used on the spray gun? Are the nozzles compatible with the material that must be applied?
10. Is the equipment easy to disassemble (and reassemble) for the cleaning and maintenance of critical parts?
    1. Gun washers are considered by some to be an effective means of cleaning spray equipment. Some services rent these gun washers and sell the solvents that are used in them. When the washing solvent is dirty, the service will pick up the old solvent for recycling and drop off new cleaner.
11. If you need to supply multiple HVLP spray guns simultaneously, will the operation of the spray equipment be affected significantly?

12. Can an automatic positioner be added to the HVLP system?

    1. An automatic positioner holds the spray gun in the desired position while the material is applied. This reduces worker fatigue and improves reproducibility.

13. Are there any local, state or federal health and safety or environmental quality regulations that apply to the use of this equipment?

14. What are the electrical power requirements for the HVLP System? Is the system energy efficient?

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